Background—Schools that are part of any initiative involving major spatial change—whether it is partial re-building, a new building, or a new campus—are facing a major challenge. In order to receive funding, the school leaders and interested staff have held numerous planning meetings and responded to specific criteria that require detailed documentation of their commitment to improved school learning environments and student learning outcomes. The latter means schools are expected to develop, implement, and share effective practice and programs and forge community partnerships that support collaboration. In doing this they are expected to think beyond traditional practices and structures.

The Middle Years—The recommendations that resulted from research into the middle years of schooling\(^1\) can be grouped around two themes—pedagogy and organisation. The new pedagogies being advocated meant that teachers would need to, among other items, foster differentiated, independent and collaborative learning and plan and teach with colleagues in multi-disciplinary teams. They would also need to assist their students to develop the skills and dispositions required for self-directed inquiry, problem based learning, teamwork and ‘real world’ research.

\(^{1}\) Especially Hill, P. & Russell, J. 1999, Systematic Whole-school Reform of the Middle Years of Schooling. Presented at the National Years of Schooling Conference, Melbourne.
For most schools the new approaches would have significant impact on administrative routines, timetables, room bookings etc. Time for teachers to plan together and attend ongoing professional development (PD) sessions etc would need to be found. Strategically placed PD sessions throughout the year would also be necessary.

To be effective, the new pedagogies require different physical spaces, but in most teachers’ minds—including many curriculum writers up to the present time—that constitutes little more than requiring desks to be pushed back at times to allow for face-to-face discussions. Teachers may be intuitively aware that the physical environment provides ‘both affordance and constraints for learning’ but they do not explicitly state such things. Learning space for most teachers is in the students’ heads. However, the Rudd government’s 2009 Building the Education Revolution (BER) scheme, with its tight timelines, is expediting spatial change. Most schools will be either undergoing refurbishment or building a new facility.

**PROFESSIONAL DEVELOPMENT**

Radical shifts in any culture require immersion of the ‘players’ in the supporting theoretical back-up. In-depth professional development sessions will be required before, during and after occupation of new spaces.

Members of the school leadership team or external consultants will need to support and guide the staff through this period. This might include offering incentives like time release for teachers to collaborate when planning to use new pedagogies in new spaces, reflect on teaching strategies and student activities, and undertake associated professional reading. It is important for the staff to be kept informed about the stages of the building process and given opportunities to have substantial input. This process will hopefully lead to the teachers seeing the new pedagogies and spaces as superior to traditional models.

As school building projects progress in Victoria, the Department of Education and Early Childhood Development will need to recognise the scale of the PD that will be required. Teachers are outside of their comfort zone because they are suddenly being faced with new campuses, colleagues, classroom configurations, technologies and teaching models.

Teachers can observe powerful new teaching and learning models by visiting campuses that have adopted learning philosophies like the Reggio Emilia student centred model, Philosophical Inquiry with its emphasis on rigorous discussions and ‘communities of inquiry’, and/or schools that have incorporated Thinking Dispositions or Habits of Mind to name a few.

---

CASE STUDIES

New school building projects can be vast in scope. For example, in one outer suburban Melbourne region, several closely situated secondary schools will combine and be sited on a single campus (School A). It comprises ‘schools within a school’ (SWIS). Each SWIS will house approximately 300 Year 7 to 12 students and their teachers. In another Melbourne district (School B), two Year 7 to 9 and one Year P to 6 schools will be built on two sites in close proximity. Fourteen hundred students and their teachers will be affected.

These two examples entail immense changes. Issues range from relatively minor items like whether there will be a new school uniform, to the huge task of handling the cultural clashes resulting from amalgamations. Many teachers will be required to adjust their teaching approaches as they move to open or re-configured spaces. They will be expected to team teach in cross-disciplinary modes, perhaps with people they hardly know. What if they don’t like team teaching or being observed by others as they practice their craft?

In mid-2008, the high schools soon to be amalgamated into School A had gathered to discuss the changes being ‘imposed’ as a result of falling enrolments across their region. The schools had vastly different cultures for historical reasons. An experienced educator and learning consultant facilitated the session.

She had already worked with a small group of teachers drawn from disparate campuses to develop a presentation for all staff on issues such as cultural development, ownership, resources, and visions of the learning culture. Each of these, and there were others, covered educational and strategic issues that were enormous in scope.

When the ‘resources’ group presented, the floodgates opened. It appeared that the teachers were starting to realise the magnitude of the change ahead. Some of the questions that arose were:

• What sort of technical assistance will be available?
• Will each mini-school have its own wet areas?
• Will the mini-schools ever combine classes with other mini-schools?
• Are there any social meeting areas or teacher common rooms?

These questions seemed to indicate that teachers had not seen plans, or if they had, were not able to read or digest them or understand the spatial changes they represented. It was clear they needed to be provided with representations of the spaces that they could understand, eg orthographic drawings or a model of what was being proposed—and currently being erected 100 metres from where they were meeting—so they could fully understand the spaces, scale and furnishings.

“The teachers’ tables were facing rows of desks in traditional classrooms that had been set out that way since the school was built in the 1930s.”

Dr Susan Wilks

7. eg Student Leadership, Community Connections, Personal Learning Plans for Students.
Walking around one of School A’s existing, soon to be replaced buildings, it was obvious that the traditional model of delivery of discrete subject content by specialists—if such a thing is possible!—continued behind closed doors, despite the ‘new’ curriculum requirements. The teachers’ tables were facing rows of desks in traditional classrooms that had been set out that way since the school was built in the 1930s. The teachers and students occupying these rooms would be using the new learning environments in less than 18 months—ready or not. As they faced their transition into new learning spaces, the time and opportunity for these teachers to explore new teaching and learning methods as well as observe the early adopters at work would need to be provided.

**Opportunities to practise in new spaces**

The architects associated with the case-study schools described in this chapter had all had a long and fruitful association with the schools during the design process. Given the short timelines associated with BER how many designers will have the opportunity to observe staff cohorts over a lengthy period as they prepare for new spaces? How many will have time to observe a class from start to finish or live a day in the life of a student to experience their routines and activities in existing spaces?

Mary Featherston, an expert in school refurbishment with a sound understanding of current educational theory (Featherston Design) believes that design professionals need to be involved in long-term action research projects with educational consultants, practitioners and students in order to develop effective design briefs. She believes that the research and development phase should also include ongoing evaluation of facilities.

Many Australian universities have built new technology-rich learning spaces that reflect an awareness of the requirements of the new pedagogical aims (eg Queensland University, Engineering Faculty; Melbourne University, Education, Engineering and Chemistry Faculties; and Deakin University, Education).

8. Personal communication with Mary Featherston, Featherston Design, 12.2.09.
These spaces facilitate student involvement in small group discussions about concepts and problems and ICT is at hand. The building of innovative and flexible teaching spaces for faculty staff and trainee teachers to use with their student cohorts is a positive move within teacher education. If, in the future, newly trained teachers are assigned to schools that contain new learning environments—and, given the BER, many will be—it will be beneficial for them to have had a prior opportunity to experience teaching in a non-traditional space.

On the grounds of School A and under the guidance of Mary Featherston, two portable classrooms were joined and set up to roughly simulate the proportions of the various spaces that the teachers would inhabit in their new buildings. Selected staff were offered the time to plan units of work based around ‘big ideas’. They then worked in small multi-disciplinary teams to immerse students in a range of learning activities. The students enjoyed working with the teachers as they learned to co-teach a range of groupings. Because these temporary spaces contained almost no integrated technologies or ‘groovy’ furniture, only part of the future experience was possible. However, the experiment was judged to be a success and the transition to the new spaces was almost seamless.

Temporary set-ups, despite their limitations, provide useful teaching and learning ‘tools’ for educators and designers. What if departments of education were to offer a range of adaptable and flexible prefabricated classrooms that could be delivered to the grounds of schools where new buildings or refurbishments are, or will be, occurring? Spatial experts could design a range of flexible new configurations with, for example, some fixed and moveable stages, mezzanines, a range of moveable furniture, computers and other technologies. Interior finishes could be ‘handsome but generic’.  

Experts, for example spatial and furniture designers and education advisors, could work with teachers and their students to experience, experiment with, and re-configure the spaces to suit the newly acquired pedagogies.

Collaboration

As a result of her experience gained through working with staff, architects, and students as schools are built or refurbished, Featherston believes that decisions about all the elements of the physical environment, built space, furnishings and loose items, must grow out of a shared vision of educational philosophy and pedagogical practice.

“Two portable classrooms were joined and set up to roughly simulate the proportions of the various spaces”

Dr Susan Wilks

Currently, built space, furnishings and loose items are considered separately and are the responsibility of separate agencies.\footnote{11}

When contemplating any new building development, both communication and collaboration are required between:

- teachers within and between schools,
- teachers with architects, refurbishment and education spaces experts,
- architects and education spaces experts with departments of education facilities managers, and
- all the above groups with students and parents.

Resistance may come from parents if they think the new curriculum models and spaces will jeopardise their child’s learning and achievement in any way. At an information session at School C (a primary school), the principal revealed the plans of a refurbishment to parents. The voiced concerns were connected with 1) the noise of open spaces impeding concentration, 2) a feeling of loss associated with the replacement of ‘normal’ classrooms and 3) a desire that the new spaces would be integrated with the school’s curriculum. These were all legitimate concerns that required addressing. An ongoing process of consulting and informing the community about the benefits of adopting the new pedagogies and spaces with an emphasis on their complementarity is important.

It is also important that both parents and teachers know that ‘traditional’ teaching models, for example direct teaching, will not continue to be supported. An environment planned for contemporary pedagogy may include settings/places for large and small group direct instruction together with a diversity of additional settings, but it will not necessarily enable concurrent class group instructional sessions involving all the students. Unless the staff is committed to working in a different way they will find new spatial designs frustrating. The principals of both School A and School C have encouraged staff members who are not happy with the changes seek jobs elsewhere. \footnote{11. Personal communication with Mary Featherston, Featherston Design, 29/9/08}

A NEW WAY OF THINKING ABOUT FACTORS BLOCKING CHANGE

---

David Perkins (http://pzweb.harvard.edu/Pts/DP.htm) defined knowledge that emanates from another culture or discourse, or where there is no apparent organizing principle, as ‘troublesome knowledge’ for learners. He believed this may be the case for different reasons, but the kind of troublesome knowledge that change agents in schools are dealing with when they ask teachers to conceptualise spaces, design desired teaching spaces, or ‘read’ plans for meaning, could be seen as what Perkins described as ‘alien’ knowledge.
This is knowledge that comes from a perspective that conflicts with one’s own perspective. Teachers facing such knowledge are experiencing a conceptual gap. Perkins believes that sometimes the learner does not even realise the knowledge is foreign. His thoughts have influenced other theorists who have coined the term ‘threshold concepts’. This term is frequently used in contemporary teacher education. Perkins was focusing on the learner and, in the context of new pedagogies and educational spaces, the teachers are the learners.

The vocabulary and ways of representation used by architects, facilities experts, acoustic engineers and builders are foreign to teachers and vice versa. Once this point is recognised, change agents can focus on ways of dealing with threshold concepts. In order to grasp a threshold concept, one requires both an ontological and conceptual shift. Once the concept is understood it is likely to be remembered and the learner can make connections previously obscured.

The process of acquisition of new knowledge or practice puts the learner in an uncomfortable emotional space. Meyer and Land call this ‘liminal space’, an unstable space in which the learner oscillates between what is known and what is emergent knowledge.

It may help the professionals leading the change process to better understand why teachers facing shifts to cross-disciplinary, student centred, problem based modes of teaching and learning AND new spaces are anxious.

Cousin provided some principles associated with threshold concept mastery about which the people driving changes to school learning spaces could be mindful of (paraphrased below).

1. Sympathetically listen to expressed opinions, misunderstandings and uncertainties.
2. Make visible the learner confusion and encourage the sharing of feelings.
3. Recognise that there is no easy passage in learning but rather ‘messy journeys back, forth and across conceptual terrain’.
4. Understand that the journey can be exhilarating but might represent a shift in identity or a sense of loss.

The following could be added. It is important to allow time for:
5. Learning the new vocabulary (e.g. purging, offset, intermediate space) and ways of reading spaces (plans, orthographic diagrams etc) that will be encountered.
6. Inventing activities that involve immersion in and reference to all the relevant fields of architecture, building and provision of facilities. For example:

---

a. Give criteria against which the teachers can make judgments about a space and/or design.
b. Provide groups with a scaled grid on which they place scaled furniture etc for a specified learning space (eg those in IKEA’s kitchen section). There are websites that have been specially designed for teachers to facilitate such activities around educational spaces. Some websites assist thinking about arrangement of furniture.

7. Provide professional reading by educational space and pedagogy experts.

8. Bring in guests to talk about previous building developments, furniture design, acoustics, the brief, design process etc.

9. Use resources like that provided by the Usable Buildings Trust as a prompt for brainstorming ways of designing suitable spaces for the users.

10. Schedule a design and procurement schedule to enable staff and interested community members to visit exciting educational spaces.

CONCLUSION

No one can mandate change. If it involves initiatives about HOW rather than WHAT people teach then they must be involved because it entails the foundations of their practice. Changing WHERE they teach shakes the foundations even further. We need to offer as many opportunities as possible for people to adapt to and embrace changes to their pedagogies and spaces.

ACKNOWLEDGEMENTS

This research has been funded by the Australian Government through the Australian Research Council Linkage Grant Scheme. The Chief Investigators of the grant entitled, Smart Green Schools, are Clare Newton, Dr Dominique Hes, Dr Kenn Fisher and Professor Kim Dovey with Dr Sue Wilks as Senior Research Associate. The industry Partners are the Victorian Department of Education and Early Childhood Development, the Victorian Government Architect’s Office, Rubida Research, Mary Featherston Design, Hayball, H2o Architects, McGauran Giannini Soon Architects, McBride Charles Ryan Architects and SBE Melbourne.
